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Excerpt From the NJDOT Guide to Metrication

CONVERSION FACTORS

ELECTRICAL ENGINEERING			
From English Units	To Metric Units	Metric Symbol	Multiply By
abampere	ampere	A	10.
abcoulomb	coulomb	C	10.
abfarad	farad	F	10^{9}
abhenry	henry	H	10^{-9}
abmho	siemens	S	10^{9}
abohm	ohm	Ω	10^{-9}
abvolt	volt	V	10^{-8}
ampere hour	coulomb	C	3 600.
EMU of capacitance	farad	F	10^{9}
EMU of current	ampere	A	10.
EMU of electric potential	volt	V	10^{-8}
EMU of inductance	henry	H	10^{-9}
EMU of resistance	ohm	Ω	10^{-9}
ESU of capacitance	farad	F	$1.112\,650 \times 10^{-12}$
ESU of current	ampere	A	$3.335\,6 \times 10^{-10}$
ESU of electric potential	volt	V	299.79
ESU of inductance	henry	H	$8.987\,554 \times 10^{11}$
ESU of resistance	ohm	Ω	$8.987\,554 \times 10^{11}$
faraday (based on carbon-12)	coulomb	C	96 487.0
faraday (chemical)	coulomb	C	96 495.7
faraday (physical)	coulomb	C	96 521.9
footcandle	lux	lx	10.763 91
footlambert	candela per square meter	cd/m^2	3.426 259
gamma	tesla	T	10^{-9}
gauss	tesla	T	10^{-4}
gilbert	ampere	A	0.795 774 7
horsepower (electric)	watt	W	746.0
kilowatt hour	joule	J	3 600 000.
lumen per square foot	lumen per square meter	lm/m^2	10.763 91
maxwell	weber	Wb	10^{-8}
mho	siemens	S	1
oersted	ampere per meter	A/m	79.577 47
ohm centimeter	ohm meter	Ω · m	0.01
ohm circular-mil per foot	ohm meter	Ω · m	$1.662\,426 \times 10^{-9}$
statampere	ampere	A	$3.335\,640 \times 10^{-10}$
statcoulomb	coulomb	C	$3.335\,640 \times 10^{-10}$
statfarad	farad	F	$1.112\,650 \times 10^{-12}$
stathenry	henry	H	$8.987\,554 \times 10^{11}$
statmho	siemens	S	$1.112\,650 \times 10^{-12}$
statohm	ohm	Ω	$8.987\,554 \times 10^{11}$
statvolt	volt	V	299.792 5
unit pole	weber	Wb	$1.256\,637 \times 10^{-7}$

Underlined factors in the table denote exact numbers.
Use the number of digits needed for the required accuracy.
When converting from metric units to English divide by the factor shown (multiply by the inverse).
Conversion values based on 1 inch = 25.4 millimeters unless otherwise shown.

CONVERSION FACTORS

GENERAL				
Quantity	**From English Units**	**To Metric Units**	**Metric Symbol**	**Multiply By**
Length	inch	millimeter	mm	25.4
	foot	millimeter	mm	304.8
	foot	meter	m	0.304 8
	foot (U.S. Survey) *	meter	m	0.304 800 6
	yard	meter	m	0.914 4
	mile	kilometer	km	1.609 344
Area	square inch	square millimeter	mm^2	645.16
	square foot	square meter	m^2	0.092 903
	square yard	square meter	m^2	0.836 127 4
	acre	square meter	m^2	4 046.856
	acre	hectare	ha	0.404 685 6
	square mile	square kilometer	km^2	2.590 000
Volume	fluid ounce	milliliter	ml	29.573 53
	quart	liter	L	0.946 352 9
	gallon	liter	L	3.785 412
	gallon	cubic meter	m^3	0.003 785 412
	cubic inch	cubic millimeter	mm^3	16 387.064
	cubic foot	cubic meter	m^3	0.028 316 85
	cubic yard	cubic meter	m^3	0.764 555
	acre-foot	cubic meter	m^3	1 233.482
Temperature	degree Fahrenheit	degree Celcius	°C	5/9 (°F-32)
Velocity	feet per second	meters per second	m/s	0.304 8
	miles per hour	kilometers per hour	km/h	1.609 344
Rate of application	gallon per square foot	liter per square meter	L/m^2	41.132 19
	gallon per square yard	liter per square meter	L/m^2	4.527 317
	gallon per acre	liter per hectare	L/ha	9.353 925
	gallon per acre	cubic meter per hectare	m^3/ha	0.009 353 925
	1 000 gallons per acre	cubic meter per hectare	m^3/ha	9.353 925
Slope	foot per foot	meter per meter	m/m	1.0
	foot per mile	meter per meter	m/m	0.000 189 4
Discharge	cubic foot per second	cubic meter per second	m^3/s	0.028 316 85

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- Use the number of digits needed for the required accuracy.
- When converting from metric units to English divide by the factor shown (multiply by the inverse).
- Conversion values based on 1 inch = 25.4 millimeters unless otherwise shown.
- * U.S. Survey Foot: In 1893, the U.S. foot was legally defined as 1200/3937 meters. In 1959, a refinement was made to bring the foot into agreement with the definition used in other countries, i.e., 0.304 8 meters. At the same time, it was decided that any data in feet derived from and published as a result of geodetic surveys within the U.S. would remain with the old standard, which is named the U.S. Survey foot. The new length is shorter by exactly two parts in a million.

CONVERSION FACTORS

CIVIL AND STRUCTURAL ENGINEERING				
Quantity	**From English Units**	**To Metric Units**	**Metric Symbol**	**Multiply By**
Mass	ounce pound ton (2,000 lb)	kilogram kilogram megagram	kg kg Mg	0.028 349 52 0.453 592 0.907 184
Mass per unit length	pound per inch pound per foot	kilogram per meter kilogram per meter	kg/m kg/m	17.857 97 1.488 16
Mass per unit area	pound per square foot ton (2,000 lb) per square foot	kilogram per square meter megagram per square meter	kg/m^2 Mg/m^2	4.882 43 9.764 856
Mass density	pound per cubic foot pound per cubic yard ton (2,000 lb) per cubic yard	kilogram per cubic meter kilogram per cubic meter megragram per cubic meter	kg/m^3 kg/m^3 Mg/m^3	16.018 46 0.593 276 1.186 554
Force	pound kip ton (2,000 lb)	newton kilonewton kilonewton	N kN kN	4.448 222 4.448 222 8.896 444
Force per unit length	pound per inch pound per foot kip per foot ton (2,000 lb) per foot	newton per meter newton per meter kilonewton per meter kilonewton per meter	N/m N/m kN/m kN/m	175.126 8 14.593 90 14.593 90 28.187 80
Force per unit area, pressure, stress, modulus of elasticity	pound per square inch kip per square inch kips per square inch pound per square foot kip per square foot	kilopascal megapascal gigapascal kilopascal megapascal	kPa MPa GPa kPa MPa	6.894 757 6.894 757 0.006 894 757 0.047 880 26 0.047 880 26
Bending moment, torque, moment of force	pound inch pound foot	newton meter newton meter	N · m N · m	0.112 984 8 1.355 818
Moment of mass	pound foot	kilogram meter	kg · m	0.138 255
Moment of inertia	inch to the fourth power	millimeter to the fourth power	mm^4	416 231.
Section modulus	inch cubed	millimeter cubed	mm^3	16 387.064

- Underlined factors in the table denote exact numbers.
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